SiPM Tester status
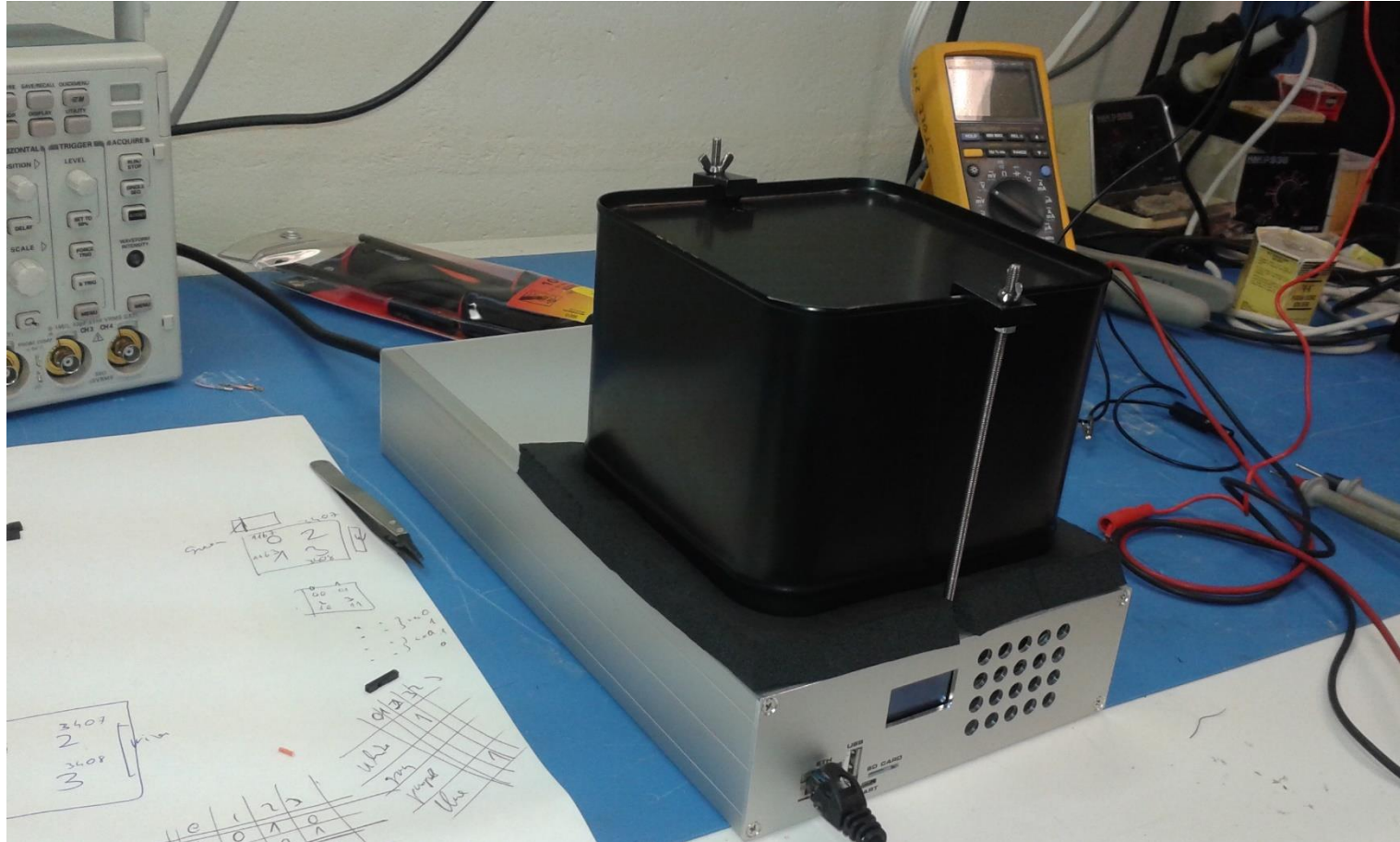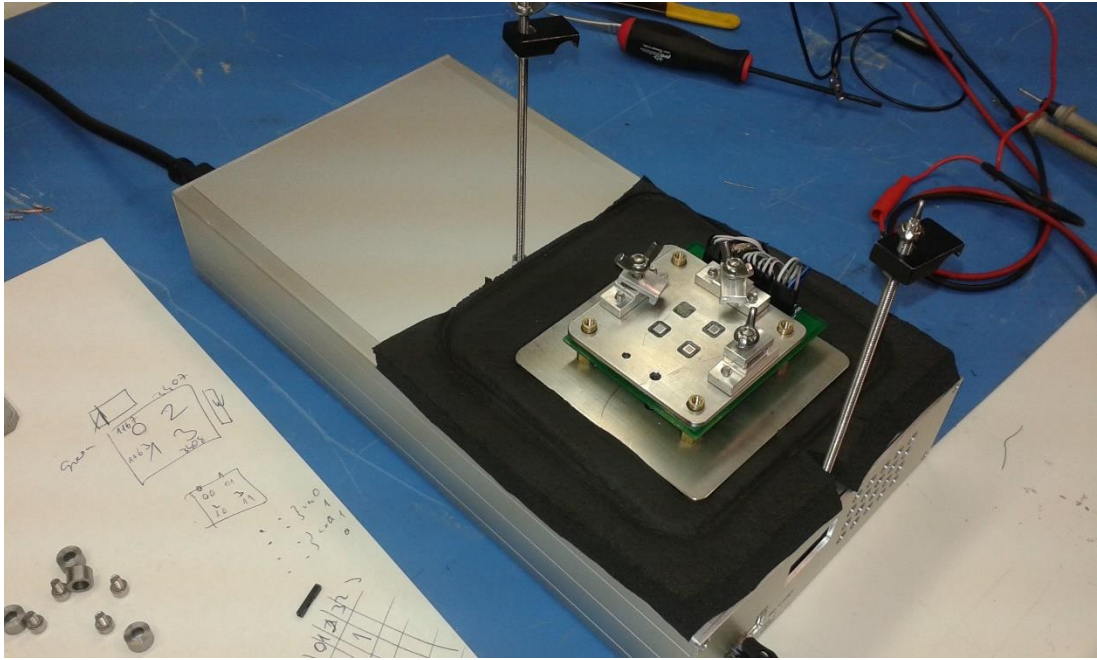
05.17.2017

Balazs Ujvari
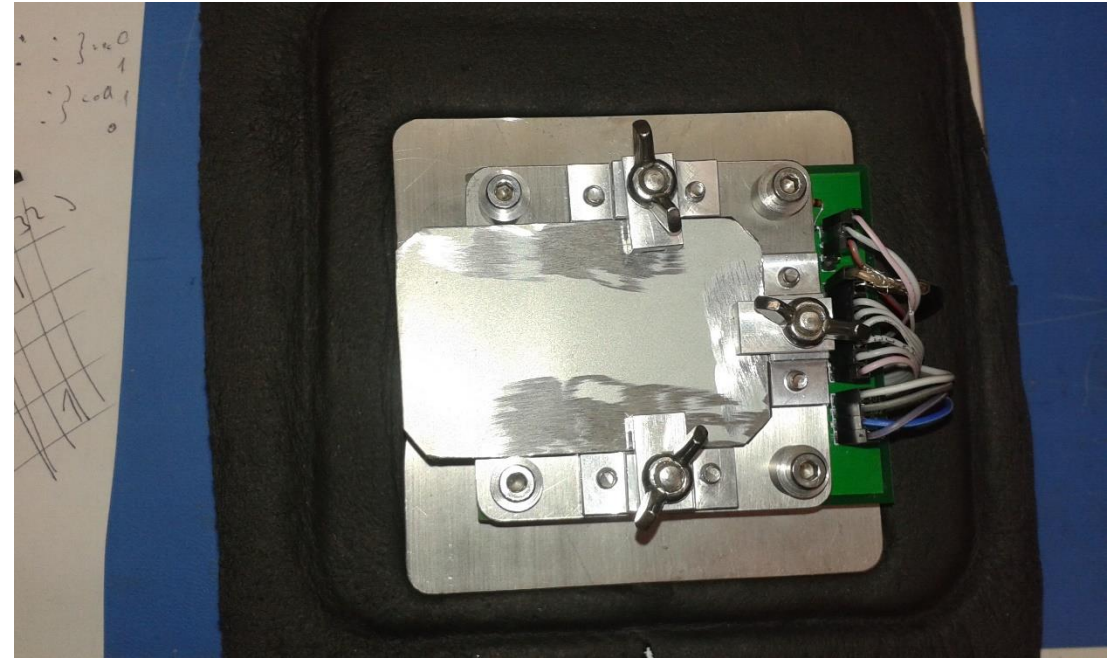
Replaceable / 2x2 / SPS and IV (DSP and uA)
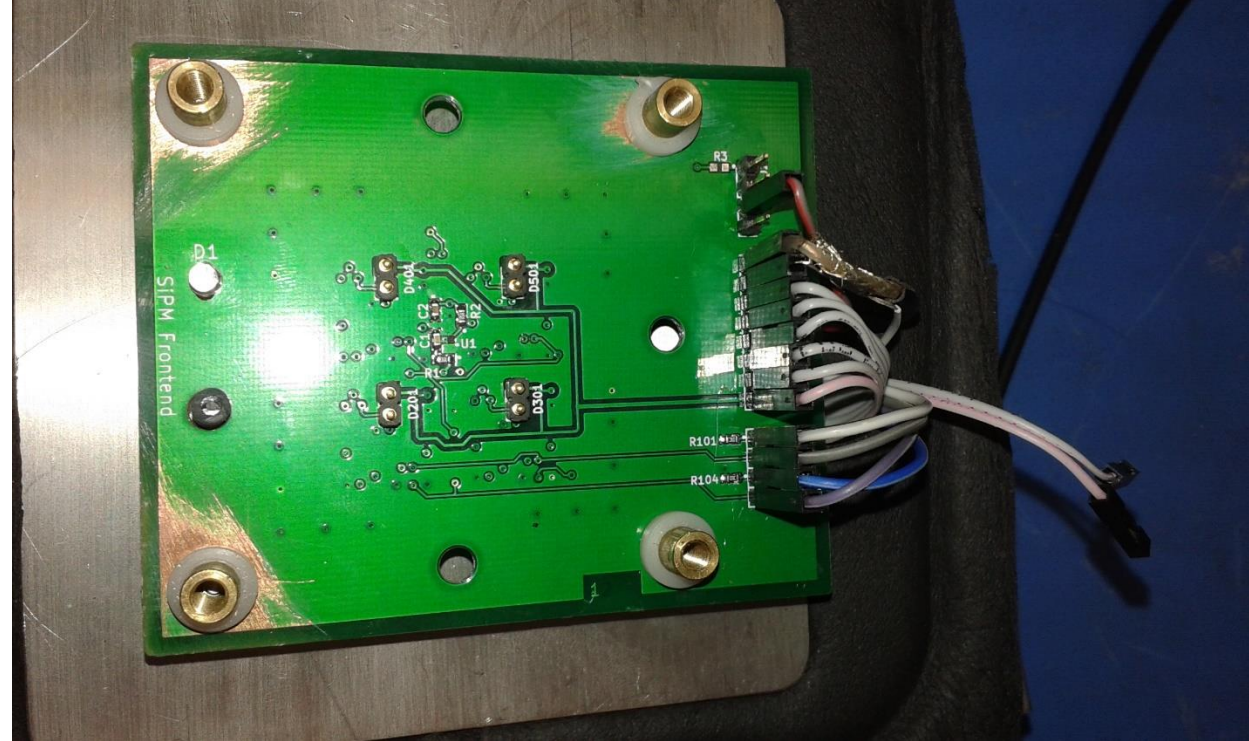
In the black box

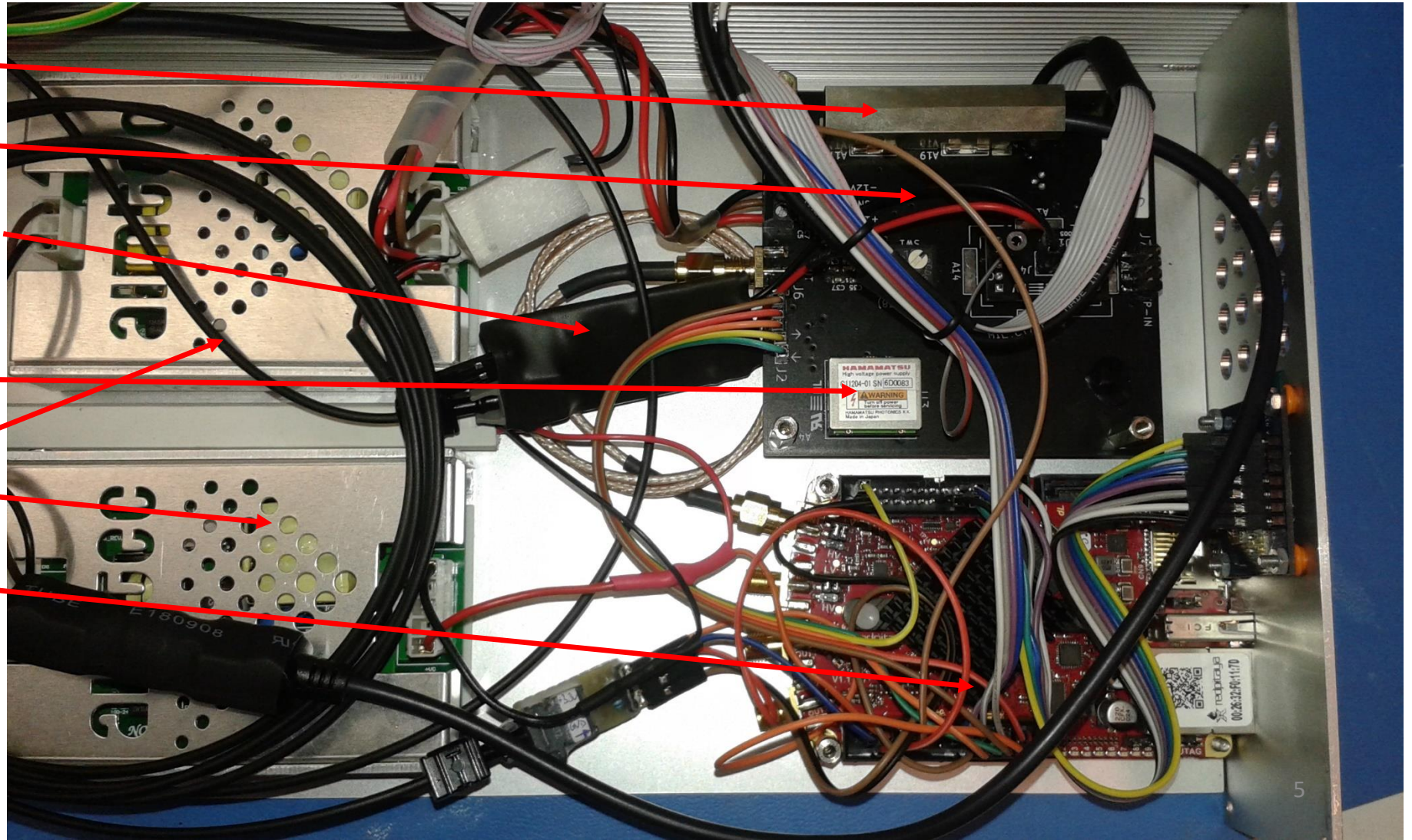- Holder for 4 SiPMs   covered by metal plate for shielding

On the plate

- 3D printed plastic holder, PCB with the springs and preamp
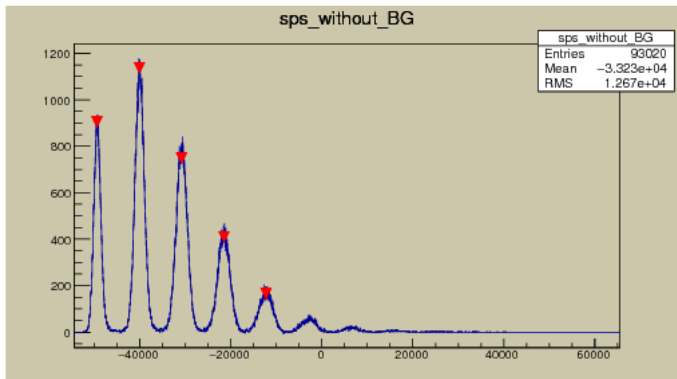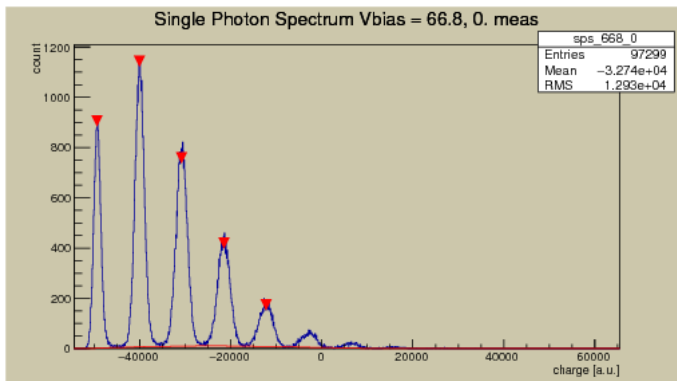
In the grey box

- LED pulser
- Main amp
- Source meter
- power supply
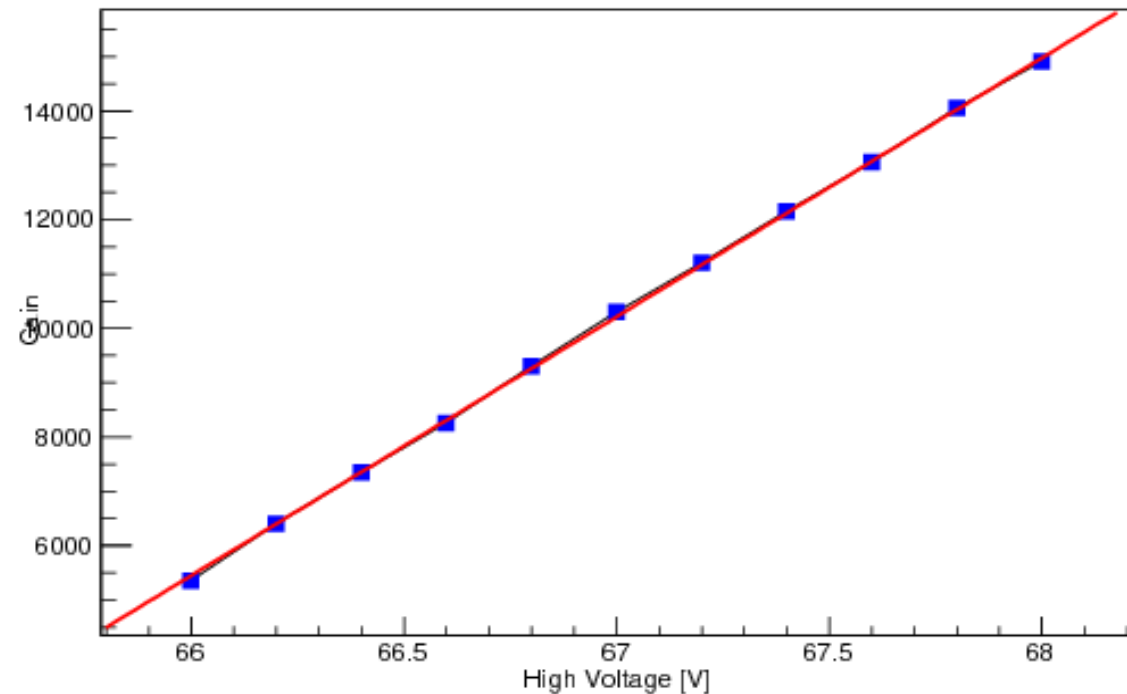 - SiPM HV
  - 12V
  - 5V
- redpitaya

What we can measure

- We have some root macro on a virtual machine, can set up the parameters and run the SPS/IV

SPS

- Number of pulses, HV steps, amplification (1-38)
- Multiple measurement?
  - Vbr mean = 65.609V
  - Vbr sigma= 0.0119V

- Now the gain is in integrated ADC unit, need to convert to normal gain.
- Monitoring tools, like no big (>0.1C) change in temperature during one measurement
- Quality control of the script that calculate the breakdown voltage

Next

- It's not that user friendly to replace the SiPM, takes ~10 mins
- Hamamatsu HV is not for scan, we have to wait 5s after change the HV, most of the time we are just waiting for HV!
  - At SPS we have 11 HV points
  - At IV 150-200!
- We should control/stabilize the temperature, for long/high stat measurements we can have +-1C changes
- Need new fiber from pulser + plexi to SiPMs
- New box where we can separate the PS, LED pulser from main amp and redpitaya